

STYGNOCORIS RUSTICUS: NEW RECORDS IN EASTERN NORTH AMERICA, WITH A REVIEW OF ITS DISTRIBUTION (HEMIPTERA-HETEROPTERA: LYGAEIDAE)¹

A.G. Wheeler, Jr.²

ABSTRACT: New state records for *Stygnocoris rusticus* (Fallén), a Palearctic rhyparochromine lygaeid, are given for Michigan, Vermont, West Virginia, and Wisconsin; Prince Edward Island is a new provincial record for Canada. Additional records are provided for Connecticut, Maine, New York, Pennsylvania and Ontario. The known occurrence in the eastern United States and southern Canada is noted and mapped. *S. rusticus* may have been introduced with ballast brought ashore from ships, but it is more likely that it entered much later, perhaps with soil, seeds, or other such material.

Stygnocoris rusticus (Fallén), a common Palearctic rhyparochromine lygaeid, was first reported from North America ("New York") by Heidemann (1908). In eastern North America the known distribution, primarily northern, includes Nova Scotia, Quebec (Montreal area north to Quebec and Tadoussac), Ontario (Ottawa and Ventnor), Maine (eastern coast), Connecticut (Canaan, Storrs), New York (Adirondacks region), and Illinois (Belvidere in extreme north). *S. rusticus* also has been recorded from British Columbia and Washington and thus is one of several Holarctic heteropterans known from northeastern North America and the Pacific Northwest. The lygaeid catalogue (Slater 1964) should be consulted for references to distribution records (except Connecticut — see Sweet 1964). A subsequent record likely to be overlooked is North East (Erie Co.), Pennsylvania, where *S. rusticus* was listed from vineyards as an "incidental species" without collection data (Jubb et al. 1979): a series of specimens was taken in pitfall traps from 28 July to early Sept. 1972 (deposited in the Pennsylvania Dept. of Agric. collection).

In detailed investigations on the rhyparochromine fauna of New England, Sweet (1964) characterized *S. rusticus* as a late-maturing, univoltine species that overwinters in the egg stage. He suggested that the obligate egg diapause may have favored its introduction with man's commerce, probably in ballast dumped from ships sailing from Europe. Sweet found that *S. rusticus* is more common in northern areas (northwestern Connecticut and northward), preferring mesic open fields dominated by tall forbs. It is one of the few rhyparochromines that ascends plants; in early fall it leaves the ground layer, where its diet consists of fallen seeds, to feed on the ripening seed heads of composites like tansy, *Tanacetum vulgare* L., and

¹Received March 26, 1983. Accepted April 16, 1983.

²Bureau of Plant Industry, Pennsylvania Department of Agriculture, Harrisburg, PA 17110.

yarrow, *Achillea millefolium* L. (Sweet 1964, Beique and Robert 1964). Sweet also noted that *S. rusticus* is atypical among Rhyparochrominae by exhibiting frequent brachyptery in temporary habitats.

Sweet (1964) suggested that the range of *S. rusticus* in eastern North America might remain nearly boreal, with its southward spread "... limited by the capacity of this insect to survive such a long summer nonreproductive period and then to oviposit vigorously in autumn." Herein, I provide an updated distribution in the eastern U.S. and Canada on the basis of personal collecting and records from museum specimens. *S. rusticus* is recorded for the first time from Michigan, Vermont, West Virginia, Wisconsin, and Prince Edward Island; additional records are given for Connecticut, Maine, New York, Pennsylvania, and Ontario. All new and previously published records are mapped for the U.S. and Ontario, and for most of the localities in southern Quebec (Fig. 1).

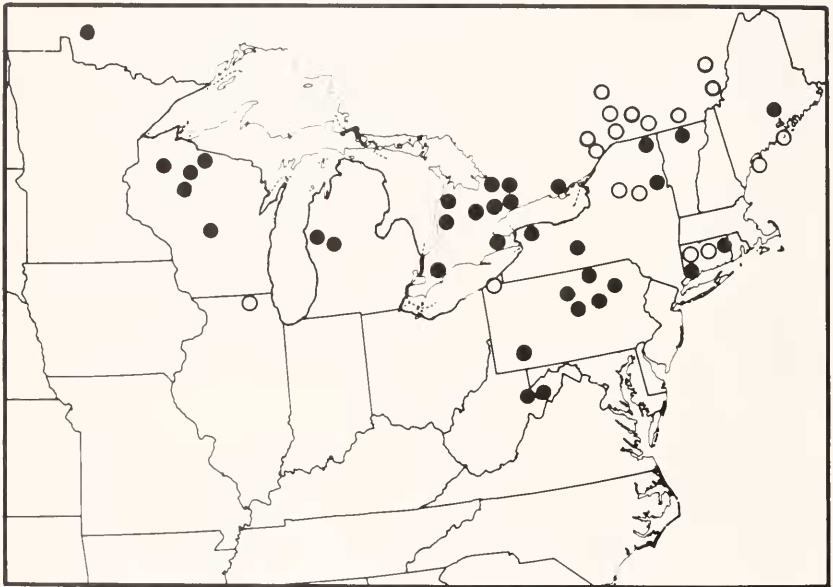


Fig. 1. New records (solid circles) and previously published records (open circles) for *Stygnocoris rusticus* in eastern North America; records for northern Quebec, Nova Scotia, and Prince Edward Island are not shown.

The following data extend the known distribution of *Stygnocoris rusticus* in eastern North America. Voucher material from personal collecting in Pennsylvania and West Virginia (and Genesee Co. and

Ludlowville, NY) is deposited in the collection of the Pennsylvania Department of Agriculture (PDA). Records from Connecticut were obtained from J.A. Slater, University of Connecticut, Storrs (UC); Wisconsin records, from B.J. Harrington, University of Wisconsin-Madison (UW-M). All Ontario records (except for Huron Co.) are based on material in the Canadian National Collection, Ottawa (CNC). Other data were obtained from the following collections: American Museum of Natural History, New York (AMNH); Cornell University, Ithaca, NY (CU); National Museum of Natural History, Washington, DC (USNM); and Royal Ontario Museum, Toronto (ROM).

CANADA. ONTARIO: Dalston, 6 Sept. 1961, Kelton & Brumpton; Eramosa, 5 Sept. 1961, Kelton & Brumpton; Grand Bend, 6 Sept. 1954, C.D.F. Miller; Grimsby, 24 Aug. 1961, Kelton & Brumpton; Huron Co., nr. Silver Cr., Seaforth Hwy. 8, 28 July 1976, D. & W. Maddison (ROM); Kincardine, 7-8 Sept. 1961, Kelton & Brumpton; Oakland, 2 Aug. 1961, J. Brumpton; Orangeville, 24 July 1962, Kelton & Thorpe; Prince Edward Co., 9 Aug. 1925, J.F. Brimley; Sioux Narrows, 8 Aug. 1960, Kelton & Whitney; Smithville, 24 Aug. 1961, Kelton & Brumpton; Thornhill, 15 Aug. 1961, L.A. Kelton; Violet Hill, 5 Sept. 1961, Kelton & Brumpton; Woodford, 6 Sept. 1961, L.A. Kelton.

PRINCE EDWARD ISLAND: Cavendish, 14 Aug. 1959, J.A. Slater (UC), and 13-19 Aug. 1976, L.A. Kelton (CNC).

UNITED STATES. CONNECTICUT: *Fairfield Co.*, Titicus Hamlet, Ridgefield, 2 Sept. 1970, F.P. Maroney; *Windham Co.*, Eastford, 7 July 1976, J.A. Slater (UC).

MAINE: *Penobscot Co.*, Orono, Aug. 1924, I.H. Blake (USNM).

MICHIGAN. *Mason Co.*, 1 Sept. 1947; *Mecosta Co.*, Mecosta, 17 July 1955, R. Dreisbach (USNM).

NEW YORK: *Clinton Co.*, Merrill, 24-26 Sept. 1914, W.D. Appel (USNM); *Genesee Co.*, Bergen Swamp Wildlife Sanctuary, 4 Sept. 1982, AGW; *Tompkins Co.*, Ithaca, 4 Sept. 1968, AGW (CU), and nr. Ludlowville, 4 Aug. 1979, AGW; *Warren Co.*, Warrensburg, 29 Aug. 1959, J.A. Slater (UC).

PENNSYLVANIA. *Centre Co.*, Scotia Barrens, 18 Aug. 1977 and 30 Aug. 1982, AGW; *Clinton Co.*, *Tamarack*, 22 Aug. 1977, AGW; *Luzerne Co.*, Dallas, 12 Aug. 1977, AGW; *Montour Co.*, Danville, 23 Aug. 1929 (USNM); *Tioga Co.*, nr. Liberty, 3 Sept. 1982, AGW; *Westmoreland Co.*, nr. Latrobe, 18 Aug. 1982, AGW.

VERMONT. *Orleans Co.*, East Charleston, 24 Aug. 1967 (AMNH).

WEST VIRGINIA. *Tucker Co.*, nr. Blackwater Falls State Park, 15 Aug. 1982, AGW, and Dolly Sods, 14 Aug. 1982, AGW.

WISCONSIN. *Price Co.*, Intersection rts. 8 & 13, 21 Aug. 1982, B.J. Harrington; *Sawyer Co.*, Radisson, 23 Aug. 1982, B.J. Harrington, and 4 mi. E. Stone Lake, Rt. 70, 23 Aug. 1982, B.J. Harrington; *Taylor Co.*, 2 mi. S. Price Co. line, co. rd. C, 21 Aug. 1982, B.J. Harrington, and 2 mi. E. rt. 13 on co. rd M, 21 Aug. 1982, B.J. Harrington; *Vilas Co.*, Arbor Vitae, 21 Aug. 1982, B.J. Harrington; *Wood Co.*, 19 Aug. 1977, K. Thorpe.

All specimens in Pennsylvania and West Virginia were collected by sweeping the seed heads of yarrow or by tapping the heads over a small tray; the collection at Bergen Swamp in New York was made from tansy. Mating pairs were common on these composites. *S. rusticus* was taken mainly during August and early September, and most of the museum specimens examined had been collected from late July to September. The general collector who relies upon sweeping is not apt to encounter this rhyarochromine

except in late summer when adults leave the ground layer to feed on ripening seeds.

I often collected *S. rusticus* on yarrow growing along roadsides. In Connecticut, Sweet (1964) reported that larger populations were found in mesic open fields than along roadside edges.

S. rusticus also was abundant in several areas well removed from its known North American distribution. The "Barrens" region of Centre Co., Pennsylvania, lying 100-200 ft. (30-61 m) above the rest of Nittany Valley, is characterized by sandy soil of low fertility. The iron ore industry that flourished in the 19th century and the associated production of charcoal with its frequent fires destroyed the original vegetation; thus, the flora differs strikingly from that of the surrounding area. Scrub oak, *Quercus ilicifolia* Wang., dominates the Barrens. Other characteristic species are aspens, *Populus* spp.; pitch pine, *Pinus rigida* Mill.; and blueberries, *Vaccinium* spp. (Westerfeld 1959). *S. rusticus* also was taken near the tamarack bogs in northern Clinton Co., Pennsylvania; in Bergen Swamp in Genesee Co., New York; and at nearly 4,000 ft. (1,219 m) on Dolly Sods in the Monongahela National Forest, Tucker Co., West Virginia. Dolly Sods is a wilderness area consisting largely of unbroken forest on the steep frontal knobs of the Alleghenies.

The abundance of *S. rusticus* in these areas probably reflects a continuing southward spread of populations rather than a natural Holarctic distribution. As Sweet (1964) noted, the introduced status of *S. rusticus* is supported by its early collection on and near the Atlantic Coast and the rather "immature" pattern of distribution (see Lindroth 1957). *S. rusticus* and the introduced *S. sabulosus* (Schilling) also are the only Western Hemisphere representatives of the otherwise Old World tribe Stygnocorini (Slater 1974; see also Slater et al. 1977). The known distribution in western North America does not point to a trans-Beringian origin; it is not known from Alaska or across northern Canada. *S. rusticus* should be considered an immigrant element in the North American fauna, probably the result of separate introductions to the Atlantic Coast and Pacific Northwest. Although a ballast origin is possible, this lygaeid was detected well after the main ballast period, suggesting an introduction with soil, seeds, packing material around nursery stock, or other products of man's commerce.

ACKNOWLEDGMENTS

I am grateful to B.J. Harrington (UW-M) and J.A. Slater (UC) for allowing me to use their unpublished records of *Stygnocoris rusticus*; to T.J. Henry (Systematic Entomology Laboratory, USDA, c/o U.S. National Museum, Washington, DC) for recording label data from specimens in the CNC and USNM and L.A. Kelton (Biosystematics Research Institute,

Agriculture Canada, Ottawa) for allowing access to the CNC; to R.T. Schuh (AMNH) for recording data from specimens under his care; and to M.F. O'Brien (University of Michigan, Ann Arbor) for checking the Univ. Mich. collection for possible specimens of *S. rusticus*. E.R. Hoebeke (CU) and K. Valley (PDA) kindly reviewed the manuscript.

LITERATURE CITED

- Beique, R. and A. Robert. 1964. Les Lygéides de la Province de Quebec, Héteroptyères (2 e partie). Ann. Soc. Entomol. Quebec 9: 72-101.
- Heidemann, O. 1908. [*Stygnocoris rusticus* in North America; specimens exhibited]. Proc. Entomol. Soc. Wash. 10: 14.
- Jubb, G.L., Jr., E.C. Masteller, and A.G. Wheeler, Jr. 1979. Survey of arthropods in vineyards of Erie County, Pennsylvania: Hemiptera-Heteroptera. Environ. Entomol. 8: 982-986.
- Lindroth, C.H. 1957. The faunal connections between Europe and North America. John Wiley & Sons, New York. 344 pp.
- Slater, J.A. 1964. A catalogue of the Lygaeidae of the world. Univ. of Connecticut, Storrs. 2 vols. 1668 pp.
- Slater, J.A. 1974. A preliminary analysis of the derivation of the Heteroptera fauna of the northeastern United States with special reference to the fauna of Connecticut. Mem. Conn. Entomol. Soc. 1974: 145-213.
- Slater, J.A. M.H. Sweet, and R.M. Baranowski. 1977. The systematics and biology of the genus *Bathydema* Uhler (Hemiptera: Lygaeidae). Ann. Entomol. Soc. Am. 70: 343-358.
- Sweet, M.H. 1964. The biology and ecology of the Rhyparochrominae of New England (Heteroptera: Lygaeidae). Part I, II. Entomol. Am. 43: 1-124; 44: 1-201.
- Westerfeld, W.F. 1959. Flora of Centre and Huntingdon counties with related historical, geological, and physiographic features. Pa. State Univ. Agric. Exp. Stn. Bull. 647, 35 pp.

BOOKS RECEIVED AND BRIEFLY NOTED (Continued)

INSECT NEUROHORMONES. M. Raabe. 1982. Plenum Press. 352 pp. \$42.50.

Neurohormones and their source sites, release modes, and physiological roles are examined in this volume on insect endocrinology.

NEW ZEALAND BUTTERFLIES: IDENTIFICATION AND NATURAL HISTORY. G. Gibbs, 1980. W. Collins Pub. 207 pp. \$45.00. Available from ISBS, Box 1632, Beaverton, OR 97075.

A conspectus of information on most aspects of butterfly life, arranged systematically, and an identification guide through use of identification keys, illustrations, and maps. Every species known to breed in New Zealand is described and illustrated in color.